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ABSTRACT

A project designed to evaluate the quality of basic skills programs in writing, reading, and mathematics, which was implemented at a regional university and a community college within a statewide system in the Southeastern United States, is described. A multiple-indicator strategy was used, involving both short-range and long-range postprogram measures. Additionally, multiple-designs were employed to compensate for methodological problems. After the first year of the basic skills evaluation project, it was found that developmental studies programs at both the regional university and the community college are experiencing a demonstrable degree of success in achieving stated objectives. Students generally begin and end their coursework with positive attitudes about and perceived need for the academic experience. Additionally, they tend to report that they have made progress in developing those basic skills in which they have been deficient. There was also substantial improvement in students' ability to perform on faculty-developed and/or faculty-selected achievement tests, and the performance gains were observable in writing, mathematics, and reading. For each of the three remedial areas, postprogram test performance shows a moderate and significant positive association with initial ability as assessed by appropriate American College Testing subtest scores. When relationships between initial ability and performance gains are assessed, the positive relationships are much weakened, and, in the case of reading, actually become negative. While the mathematics and writing programs appeared to be somewhat more effective at the community college than at the regional university, the reverse was true for the reading programs. A bibliography is included. (SW)

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EVALUATING THE QUALITY OF BASIC SKILLS PROGRAMS*

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EVALUATING THE QUALITY OF BASIC SKILLS PROGRAMS

(ABSTRACT)

The rationale, methodology, activities, and preliminary results of a project designed to evaluate the quality of basic skills programs in writing, reading, and mathematics are described. The project involves a regional university and a community college, which are both part of a statewide system of higher education in the Southeastern United States. A multiple-indicator strategy is utilized, involving both short-range and long-range postprogram measures. Additionally, multiple-designs are employed to compensate for the several biases, feasibility problems, and other inadequacies of single-design approaches to evaluation. Data available to date are indicative of program effectiveness at both institutions.

EVALUATING THE QUALITY OF BASIC SKILLS PROGRAMS

Both the rationale and methodology for the assessment of academic programs have been the subjects of considerable interest and discussion in recent years. In large part, this interest has been a correlate of a more general concern with increasing the public accountability of higher education. Representative of the growing and important literature on accountability and program evaluation are the contributions of Anderson and Ball (1978), Anderson, Ball, Murphy, and Associates (1973), Astin (1970a; 1970b; 1974), Baird (1977), Balderston (1974), Bowen (1974; 1977), Cooley (1976), Dressel (1972; 1976), Feldman (1970), Fincher (1978a; 1978b; 1979), Folger (1977), Hartnett (1971), Lenning, Lee, Micek, and Service (1977), Miller (1979), Pedazur (1975), and Rock, Centra, and Linn (1969), to cite some of the more recent.

While a substantial amount of attention has been and is being afforded to the assessment of "general education" and "major field" outcomes, it is also evident that "developmental studies" or "basic skills" programs are becoming the subjects of serious review, discussion, and controversy (Baldwin and Others, 1975; Carman, 1971; Cosby, 1975; Cross, 1976; Entwistle, 1960; Gordon, 1970; Grant and Hoeber, 1978; Maxwell, 1979; Piesco, 1978; Roueche, 1973, 1977; Sharon, 1970; Trillin and Associates, 1980; and Zwick, 1965). The purpose of the current research is to describe the rationale, methodology, activities, and preliminary results of a project involving evaluation of the quality of basic skills programs in writing, mathematics, and reading. The project involves a regional university and a community college, both part of a state-wide system of higher education in the Southeastern United States. Description of the project is preceded by a brief survey of methodological issues and problems

involved in attempts to evaluate the effectiveness of basic skills programs.

METHODOLOGICAL OPTIONS AND PROBLEMS

In their timely and substantial essay, Akst and Hecht (1980) have identified and discussed a variety of methodological options and problems in the evaluation of basic skills programs. When the objective of a summative evaluation is to provide evidence regarding the effectiveness of remedial instruction, the researcher has important decisions to make regarding the selection of preprogram and postprogram measures, the choice of the evaluative design, and the extraction and definition of the grouping statistic. Recognizing the numerous practical, political, and ethical problems associated with the several decision alternatives, Akst and Hecht emphasize the need to be, "objective... informed ... comprehensive... pragmatic... politic... selective... and prepared to compromise " (Akst and Hecht, 1980, pp. 294-296).

Selecting the preprogram measure constitutes a very important initial step in the research process. Ordinarily, the preprogram measure involves a test which may be used, "as a base line for later comparisons, a device for sorting out groups to be compared, and a gauge of whether groups were equivalent before the start of remedial instruction " (Akst and Hecht, 1980, p. 266). The preprogram measure should satisfy at minimum measurement criteria of validity and reliability as well as those of feasibility and practicality of administration.

The choice of the postprogram measure is especially critical to the outcome of the evaluation. Of particular importance is appreciation of the fact that previous research indicates that short-range postprogram measures are likely to be indicative of program success, while long-range measures are likely to be more equivocal (Akst and Hecht, 1980, p. 293). Short-range measures generally involve the use of gain scores. The average score on the pretest is subtracted from the average score on the posttest as a measure of learning growth, where

the posttest is either the same or a parallel form of the pretest.

While short-range measures concern assessment of student performance at the end of the course, long-range measures involve instructional effectiveness indicators of student behavior after the remedial program has been completed. Examples of postprogram measures are grade in next course, grade point average after a specified number of semesters or quarters, grade point average in the particular subject matter area (e.g., in all math courses for remedial mathematics students), credits accumulated, and attrition. Postprogram measures, whether short-range or long-range, should also be selected with a view toward satisfying validity and reliability criteria.

The choice of the postprogram measure is also affected by the nature of the evaluative design. Akst and Hecht (1980, pp. 268-294) describe and discuss the respective advantages and disadvantages of eight different designs, each of which is characterized in terms of its typical preprogram measure, postprogram measure, feasibility problems, possible biases, comprehensiveness, equitability, and educational standard. Feasibility problems involve such matters as the ethics of withholding remediation from students constituting a control group and assembling the control group for a posttest. The possible biases result from tests and testing procedures, but mostly they derive from the type of evaluation design selected. The single-group pretest-posttest comparison involves the largest number of possible biases. These include, "Test administration, student attitudes, teaching to the test, practice effect, instrument, Hawthorne effect, dropout, regression toward the mean, external learning history, and maturation" (Akst and Hecht, 1980, p. 291). At the other extreme, involving the fewest number of possible biases, are designs such as the cross-program comparison, which is subject to the effects of, "Initial differences, history, and the differential operation of other biases."

All but one of the eight designs are comprehensive, and only one or two are inequitable; i.e., "results can be interpreted if they go in one direction, but not if they go in the other." Finally, half of the designs described provide an educational standard.

If there is one message that comes through clearly from a perusal of Akst and Hecht's careful, thorough and systematic methodological survey, it is that there is no single design which may be employed to provide conclusive evidence regarding program effectiveness or ineffectiveness. Even such statistically sophisticated models as the regression-discontinuity design is subject to numerous possible biases, has feasibility problems, and does not provide an educational standard. Similarly, the very simple single-group pretest-posttest comparison, while the most feasible of the eight designs, also does not provide an educational standard and reveals the greatest number of possible biases. Each of the other designs is also characterized by its particular combination or configuration of strengths and weaknesses. Those designs are the remediated-unremediated comparison, the marginally-remedial, marginally-exempted comparison, the remediated-exempted comparison, the cross-program comparison, the norm-group comparison, and the historical comparison.[1]

Appreciation of the several methodological options and problems has clear implications for an informed approach to the evaluation of basic skills programs. With regard to the selection of program measures, and especially postprogram measures, a multiple-indicator strategy is indicated. Several, rather than only one, indicators of program effectiveness should be employed. Similarly, since each evaluative design is subject to its own peculiar configuration of weaknesses, a multiple-design strategy is also a desideratum.

THE EVALUATION PLAN

In recognition of the limitations inherent in any singular measurement or design approach to the problem, the evaluation plan developed for the present research has the following essential characteristics: (1) It entails a multiple indicator strategy, rather than relying upon a single criterion for the assessment of program quality. Furthermore, the indicators are of both the "objective" (test and course performance data) and "subjective" (student testimony or attitudes) varieties; (2) Appropriate comparison ("control") groups are identified to provide comparative data for selected categories of indicators, and both indicators and comparison groups are identical (or nearly so) for the two institutions; and (3) Utilization of multiple indicators and comparison groups allows implementation of several evaluative designs. Each of these distinguishing evaluation plan characteristics is discussed briefly below. The data base for the research is also described.

Multiple Indicators

Preprogram measures are of two types, ACT Assessment subtest scores and scores on faculty-developed or faculty-selected achievement tests. The ACT English usage subtest scores and scores on a faculty-developed composition test (writing sample) are utilized as preprogram measures for the remedial writing programs. The ACT Math subtest scores and scores on a faculty-developed mathematics tests are utilized as preprogram measures for the remedial mathematics programs. Similarly, ACT Social Studies Reading subtest scores and scores on the faculty-selected Nelson-Denny Reading Test are used as preprogram measures for the remedial reading programs.

In addition to the test performance measures, as represented by the ACT subtest scores and scores on faculty-developed or faculty-selected achievement tests, students enrolled in all developmental writing, mathematics, and reading

courses are also administered an attitudinal questionnaire at the beginning of the quarter. These questionnaires have been designed to elicit student attitudes toward and perceived need for developmental work.

Postprogram measures for each of the three developmental studies areas are of both the short-range and long-range varieties. The short-range measures consist of end-of-course performance on the faculty-developed or faculty-selected achievement tests (same form for writing and mathematics, and a parallel form for reading). Posttests of the attitudinal questionnaires are also utilized. Long-range measures include grade in next related course, number of subsequent related courses taken, grade point average in subsequent related courses, overall grade point average, and retention and graduation rates.

Comparison Groups

Since faculty and administrators at both participating institutions perceive serious ethical problems involved in the withholding of remediation from students identified as deficient in basic skills, randomization of remedial students into remediated and nonremediated groups is precluded. Accordingly, comparison groups at both institutions consist of students who test into remediation but who have not been properly advised to participate, or who simply refuse to participate. Students unable to register because of already-full classes constitute the largest proportion of the comparison groups. Although there exists the potential for several biases of selectivity, the ethical issue has been deemed as more important than the demands of scientific rigor.

Evaluative Designs

The multiple indicator approach together with the utilization of appropriate comparison groups allow implementation of several evaluative designs. The single-group pretest-posttest comparison is utilized to provide insights

into short-range program effects. ACT subtest scores, scores on faculty-developed or faculty-selected achievement tests, and responses to attitudinal questionnaires serve as preprogram measures; and the latter two assessment instruments are administered at the end of the remedial courses as postprogram measures. Since the results of the single-group pretest-posttest comparisons are subject to questionable internal validity due to the absence of a control group, additional designs are utilized to compensate and to help control for the possible biases. Each of the other designs utilize several, common long-range postprogram measures, which are: grade in next related course, number of subsequent related courses taken, grade point average in subsequent related courses, overall grade point average, and retention and graduation rates. Common to these designs also are the preporgram measures, ACT subtests, and faculty-developed or faculty-selected achievement tests scores.

Additional designs employed in the present study are the remediated-unremediated comparison, the marginally-remedial, marginally-exempted comparison, the remediated-exempted comparison, the cross-program comparison, and the norm-group comparison (for reading only). Furthermore, since the study is to be of several years duration, subsequent utilization of the historical comparison will become feasible.

Data Base

A data base (SPSS file) has been developed which allows analyses required by the several evaluative designs identified above. Included in the study are approximately 1770 first-time freshmen enrolled in the fall quarter of 1979, 900 at the regional university and 870 at the community college. Of the beginning students at the regional university, approximately 400 enrolled in one or more remedial courses, while the corresponding number at the community college was 140. The remaining students are of two types, those who did not test into the remedial

group and who were subject to "normal" programming and those who tested into the remedial group but who were excluded for one reason or another, usually because of lack of space in course sections. In addition to basic demographic information, such as sex, age, race, and high school of origin, ACT scores are available as preprogram measures for most students in the normal, unremediated and remediated groups. While scores on the faculty-developed or faculty-selected achievement tests are available as preprogram measures for all of the remediated and for nearly all of the unremediated students, only a very small proportion of the normals were so tested.

ACT subtest scores and achievement pretest scores are used to identify students in need of remediation. Specifically, students who score less than 14 on the ACT Math subtest and/or less than 70 out of 100 on the faculty-developed math test constitute the unremediated and remediated groups for mathematics. With regard to writing, a cutoff score on the ACT English Usage subtest of 14 and a score of 27 out of 45 on the faculty-graded writing sample are used to define the unremediated and remediated English students. The corresponding scores for reading, where the ACT Social Studies Reading Subtest and the Nelson-Denny Reading Test are used, are 14 and 10th grade level, respectively.

While short-range postprogram measures in the form of posttest scores on the faculty-developed or faculty-selected achievement tests are available only for the remediated groups (hence, the single-group pretest-posttest design), long-range postprogram measures are available for all unremediated and normal as well as for remediated students. The SPSS file contains quarter-by-quarter information on such variables as grade point average and grades earned in related courses.

In short, the data base has been constructed with an eye toward maximum analytical versatility of the type required for a multiple-indicator and

mulitple-design evaluation strategy.[2]

RESULTS

At the time of this writing the several analyses involving long-range post-program measures are still in progress. Accordingly, presentation of results for those evaluative designs utilizing such measures must await reporting in subsequent publications. Data analyses completed to date, however, do allow communication of preliminary results bearing upon the single-group pretest-posttest comparison as well as the cross-program comparison. Current findings are considered preliminary and tentative since they are subject to review and modification following the study's replication. At both institutions all aspects of the first year's evaluation activity are being replicated utilizing the 1980 cohort of first-time freshmen. Replication is deemed important for assurances of reliability of observations, and it is especially desirable in light of the small sample sizes for the remedial writing and reading students at the community college. Those sample sizes of 29 and 22, respectively, warrant caution in the interpretation of results, especially as they involve cross-program comparisons.

In the interest of a reasonably parsimonious presentation, the very detailed results of test performance and test performance gains are not reported here. Neither is it feasible to display the substantial data describing the results of analyses utilizing the attitudinal pre- and postprogram questionnaires.[3] Accordingly, for our immediate purposes, we shall simply summarize the principle findings of the several analyses completed to date, present selected summary statistics describing program performance, and discuss briefly the effects of initial ability upon postprogram performance and upon performance gains.

The results of the first action year of the basic skills evaluation project have revealed that developmental studies programs at both the regional

university and the community college are experiencing a demonstrable degree of success in achieving stated objectives. Students generally begin and end their course work with positive attitudes about and perceived need for the academic experience. Additionally, they tend to report that they have made progress in developing those basic skills in which they have been deficient. The findings also reveal substantial improvement in students' ability to perform on faculty-developed and/or faculty-selected achievement tests, and such pretest-posttest gains in performance are observable in the three areas of writing, mathematics, and reading.

The statistics of Table 1 are intended to summarize the principle findings concerning test performance. For the three remedial areas at both institutions preprogram and postprogram test results are described in terms of means and standard deviations. Achievement gains for the programs appear as actual average change in test scores. Additionally, gain scores are presented in terms of standard deviation units (the ratio of average change to preprogram standard deviation), a procedure whose advantages for facilitating comparisons have been discussed recently by Bowen (1977, pp. 100-103).

Utilizing Bowen's suggested, empirically-based typology for the characterization of change (1977, pp. 103), we would describe the gains (as expressed in standard deviation units) in mathematics and writing as reflecting a "very large increase" in performance; while the gains in reading are seen as a "large increase." Inter-institutional comparisons of performance gains also suggest somewhat superior program performance in writing and mathematics at the community college, while the regional university remedial students surpass their community college counterparts in reading. As noted above, however, the small sample sizes for the community college warrant caution in making generalizations. It is believed that data from the replication will provide more definitive

inter-institutional comparisons.

Since our findings do suggest cross-program performance differentials, crucial questions must be raised concerning the comparability of the remediated groups. In particular, and very importantly for the cross-program comparison design, the effects of initial differences upon program performance must be known and/or controlled. For our purposes, appropriate ACT subtest scores may be utilized as indicators of initial differences.

Tables 2, 3, and 4 present selected statistics descriptive of the effects of initial ability upon postprogram performance and upon performance gains for the remedial areas of writing, mathematics and reading, respectively.[4] For each of the three remedial areas, postprogram test performance shows a moderate and significant positive association with initial ability as assessed by appropriate ACT subtest scores. For example, correlations of postprogram test performance measures with corresponding ACT subtest scores are all statistically significant ($p=.001$) and they range from .42 for mathematics, to .45 for writing to .47 for reading. When the focus is shifted to relationships between initial ability and performance gains, however, the positive relationships are much weakened, and, in the case of reading, actually become negative. Once again examining the simple R's, we find the relationships of ACT subtest scores and performance gains for writing and mathematics to be positive, but weak and not significant with values of .13 ($p=.15$) and .11 ($p=.21$), respectively. With regard to reading, the negative correlation is -.18 ($p=.08$).

Awareness of the effects of initial ability upon postprogram performance and upon performance gains allows for a somewhat more informed interpretation of our findings, particularly those involving cross-program comparisons. Table 5 displays data on initial ability as assessed by ACT subtest scores for students at both the regional university and the community college. While remediated students at the regional university show higher ACT subtest scores in

writing and reading, the two institutions are nearly identical in terms of initial ability in mathematics. Given the relationships between program measures and ACT Subtest Scores as described earlier (Tables 2-4), and assuming no differences in program effectiveness, we would have predicted the following cross-program differentials:

A. Remediated writing students at the regional university should show higher scores in postprogram performance and somewhat higher performance gains than the remediated students at the community college.

B. Remediated mathematics students at the two institutions should show both postprogram performance scores and performance gains which are approximately equal.

C. Remediated reading students at the regional university should show higher scores in postprogram performance and perhaps somewhat smaller performance gains than the remediated reading students at the community college.

Reexamination of the data of Table 1 in light of our "predictions" allows us to state that: (a) Because of prediction A, the suggested superior effectiveness of the writing program at the community college is given additional support; (b) Because of prediction B, the suggested superior effectiveness of the remedial mathematics program at the community college is given additional support; and (c) Because of prediction C, there is little or no additional support for the suggested superiority of the remedial reading program at the regional university.

SUMMARY AND CONCLUSIONS

We have discussed the rationale, methodology, activities, and results of a project designed to evaluate the quality of basic skills writing, reading and mathematics programs at a regional university and a community college, which

are both part of a state-wide system of higher education in the Southeastern United States.

Our review of methodological options and problems compelled us to argue for the utilization of both multiple-indicator and multiple-design strategies for program evaluation.

The evaluation plan for the project was characterized as utilizing both short-range and long-range postprogram measures; and the short-range measures included attitudinal as well as test performance indicators. The plan also includes appropriate comparison groups which together with the several post-program measures, allow the implementation of several evaluative designs.

The elements and structure of the project data base was described and its analytical versatility emphasized.

Preliminary results for the single-group pretest-posttest comparison and for the cross-program comparison were presented. The findings are suggestive of substantial program success at both institutions in the three areas of writing, reading and mathematics. And, while the mathematics and writing programs appeared to be somewhat more effective at the community college than at the regional university, the converse differentials were observed for the reading programs. Examination of the effects of initial ability upon post-program performance and upon performance gains helped to provide a more informed interpretation of the cross-program comparisons.

Finally, it was emphasized and it warrants reemphasizing that we must be cautious in attributing certainty and significance to the cross-program comparisons due to the small sample sizes. More definitive evidence pertaining to these matters is expected to emerge from the replication of this research and the careful analysis of the long-range postprogram measures.

We conclude by underscoring the need for the kind of approach to evaluation that has been described herein. There has thus far been a paucity of both interest in and contributions to the evaluation of basic skills programs on the part of institutional researchers. The methodology and findings of the present study ought to have significant implications for the assessment of the quality of such programs; and therefore ought to be of substantial interest to basic skills program directors, their faculties, institutional researchers, and a variety of academic and non-academic administrators.

NOTES

1. The description of the characteristics, strengths and weaknesses of each of these designs is beyond the scope of this article. The reader is refered to the original source (Akst and Hecht, 1980, pp. 290-291).
2. Readers interested in a detailed description of the data base may write to the senior author requesting a copy of the codebook.
3. A detailed description of findings based upon short-range postprogram measures is available as a formal project report upon request to the senior author.
4. Due to small sample sizes, it was not possible to perform comparable analyses for remediated writing and reading students at the community college. An identical analysis for mathematics yielded comparable results, however. For example, correlations of Postprogram Test Performance Measures and Performance Gain Measures with ACT Math Subtest scores for the community college sample were .34 ($p=.002$) and .05 ($p=.331$), respectively.

Table 1: Preprogram and Postprogram Performance Measures for Remediated Students at the Regional University and at the Community College, Fall Quarter, 1979

Basic Skills Program and Institution	Preprogram Test Scores	Postprogram Test Scores	Average Change in Test Scores (Actual)	Average Change in Test Scores (In S.D. Units)
WRITING				
Regional University (N=130)	$\bar{X}$ = 19.25 s = 6.78	$\bar{X}$ = 30.93 s = 9.17	+11.68**	+1.72
Community College (N=22)	$\bar{X}$ = 16.44 s = 4.55	$\bar{X}$ = 28.50 s = 6.57	+12.06**	+2.65
MATHEMATICS				
Regional University (N=121)	$\bar{X}$ = 43.90 s = 15.45	$\bar{X}$ = 61.70 s = 19.13	+17.80**	+1.15
Community College (N=87)	$\bar{X}$ = 40.99 s = 12.90	$\bar{X}$ = 69.92 s = 14.30	+28.93**	+2.24
READING				
Regional University (N=89)	$\bar{X}$ = 9.87 s = 2.95	$\bar{X}$ = 12.19 s = 2.13	+ 2.32**	+ .79
Community College (N=29)	$\bar{X}$ = 8.55 s = 1.42	$\bar{X}$ = 9.63 s = 2.15	+ 1.08*	+ .76

* $p < .01$
** $p < .001$

Table 2: Effects Upon Postprogram Test Performance and Upon Performance Gains of Initial Writing Ability as Assessed by ACT English Usage Subtest Scores for Remediated Students at the Regional University, Fall Quarter, 1979

Postprogram Test Performance and Performance Gains Measures	Correlations with ACT English Subtest Scores (Simple R and Significance Levels)	Means and Standard Deviations on Specified Postprogram and Gain Measures for ACT English Subtest Scores: 12 - 24 (N=34)	0 - 11 (N=37)	Mean Differences	t Values	Significance Levels
Postprogram Test Performance	.45 (p = .001)	$\bar{X}$ = 36.29 s = 7.57	$\bar{X}$ = 26.81 s = 8.39	9.48	5.01	p < .001
Performance Gain	.13 (p = .15)	$\bar{X}$ = 14.06 s = 8.68	$\bar{X}$ = 9.46 s = 8.19	4.60	2.29	p= .025

Table 3: Effects Upon Postprogram Test Performance and Upon Performance Gains of Initial Mathematics Ability as Assessed by ACT Math Subtest Scores for Remediated Students at the Regional University, Fall Quarter, 1979

Postprogram Test Performance and Performance Gain Measures	Correlations with ACT Math Subtest Scores (Simple R and Significance Levels)	Means and Standard Deviations on Specified Postprogram and Gain Measures for ACT Math Subtest Scores: 12 - 23 (N=25)	2 - 10 (N=28)	Mean Differences	t Values	Significance Levels
Postprogram Test Performance	.42 (p = .001)	$\bar{X}$ = 70.80 s = 16.17	$\bar{X}$ = 58.21 s = 16.30	12.59	2.82	p = .007
Performance Gain	.11 (p = .210)	$\bar{X}$ = 23.84 s = 13.25	$\bar{X}$ = 17.29 s = 11.64	6.55	1.90	p = .063

Table 4: Effects Upon Postprogram Test Performance and Upon Performance Gains of Initial Reading Ability as Assessed by ACT Social Studies Reading Subtest Scores for Remediated Students at the Regional University, Fall Quarter, 1979

Postprogram Test Performance and Performance Gain Measures	Correlations with ACT Social Studies Reading Subtest Scores (Simple R and Significance Levels)	Means and Standard Deviations on Specified Postprogram and Gain Measures for ACT Social Studies Reading Subtest Scores: 14 - 30 (N=24)	3 - 13 (N=41)	Mean Differences	t Values	Significance Levels
Postprogram Grade Level on Nelson-Denny Reading Test	.47 (p = .001)	$\bar{X}$ = 13.78 s = 1.00	$\bar{X}$ = 11.37 s = 2.27	2.41	5.88	p < .001
Performance Gain on Grade Level of Nelson-Denny Reading Test	-.18 (p = .077)	$\bar{X}$ = 1.78 s = 2.37	$\bar{X}$ = 2.57 s = 2.06	-.79	-1.36	p= .181

Table 5: Initial Ability as Assessed by ACT Subtest Scores for Remediated Writing, Mathematics and Reading Students at the Regional University and at the Community College, Fall Quarter, 1979

ACT Subtest	Initial Ability of Remediated Students	
	Regional University	Community College
English Usage	$\bar{X}$ = 12.32 s = 4.36 N = 130	$\bar{X}$ = 8.05 s = 2.26 N = 22
Mathematics	$\bar{X}$ = 10.95 s = 4.33 N = 121	$\bar{X}$ = 10.84 s = 4.06 N = 87
Social Studies Reading	$\bar{X}$ = 13.00 s = 5.18 N = 89	$\bar{X}$ = 8.44 s = 4.49 N = 29

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